Title (en)

IMAGING OPTICAL SYSTEM, IMAGING DEVICE, AND VEHICLE

Title (de)

OPTISCHES ABBILDUNGSSYSTEM, ABBILDUNGSVORRICHTUNG UND FAHRZEUG

Title (fr)

SYSTÈME OPTIQUE D'IMAGERIE, DISPOSITIF D'IMAGERIE ET VÉHICULE

Publication

EP 4130837 A4 20240410 (EN)

Application

EP 21775478 A 20210304

Priority

- JP 2020053082 A 20200324
- JP 2021008473 W 20210304

Abstract (en)

[origin: EP4130837A1] Provided is an image-capturing optical system including a first lens group that includes a first lens having a positive refractive power, a second lens having a negative refractive power, and a third lens having a positive refractive power arranged in this order starting from an object side or that includes a first lens having a negative refractive power and a second lens having a positive refractive power arranged in this order starting from the object side, the first lens group having a negative refractive power as a whole, at least one on-axis luminous flux regulating diaphragm, and a second lens group that has a positive refractive power. A surface of at least one of the lens that are included in the first lens group and that have the negative refractive power, the surface being located on the object side, is a convex surface in a paraxial region and has an aspherical surface having a shape with which convex power decreases with increasing distance from an optical axis. A surface of the second lens group on the most image side has a convex shape toward the image side in a paraxial region. The image-capturing optical system satisfies the following conditional expressions (1) to (3): $-1.30<fn/f<-0.6$ $Di/\tan\omega/100<-0.42$ $\omega\leq 120°$ where f is a focal length of an entire lens system, fn is a focal length of a negative lens of the first lens group, Di is a distortion at a maximum angle of view (unit: %), and ω: an incident angle of a maximum angle of view light beam on the object side.

IPC 8 full level

G02B 13/04 (2006.01); **B60R 11/04** (2006.01); **G02B 9/60** (2006.01); **G02B 9/62** (2006.01)

CPC (source: EP US)

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Citation (search report)

- [A] JP H08334688 A 19961217 - FUJI PHOTO OPTICAL CO LTD
- [A] US 2018213151 A1 20180726 - JOUJIKI KOUTAROU [JP], et al
- [A] US 2012287515 A1 20121115 - HSU CHIH-WEN [TW], et al
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- See also references of WO 2021192894A1

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

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DOCDB simple family (application)

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